

IN THE CLAIMS:

Please cancel Claim 3 without prejudice or disclaimer of subject matter.

Please add new Claims 24-40 and amend Claims 1, 2 and 7 to read as follows.

1. (Currently Amended) An electron-emitting device comprising first and second carbon films disposed on a surface of a substrate, and first and second electrodes electrically connected to the first and the second carbon films, respectively, wherein the carbon films have a first region showing orientation, and a direction of the orientation is approximately parallel to the surface of the substrate, and wherein the direction of the orientation is not less than -45 degrees and not more than +45 degrees against the surface of the substrate.

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~~2.~~ (Currently Amended) An electron-emitting device comprising first and second electrodes disposed on a surface of a substrate, and a carbon film electrically connected to the first and second electrodes, wherein the carbon film has a first gap, and has a first region showing orientation, and a direction of the orientation is approximately parallel to the surface of the substrate, and wherein the direction of the orientation is not less than -45 degrees and not more than +45 degrees against the surface of the substrate.

3. (Cancelled).

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~~4.~~ (Previously Presented) The electron-emitting device according to claim ~~2~~, wherein the first region faces the first gap.

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~~5.~~ (Previously Presented) The electron-emitting device according to claim ⁷~~4~~, wherein said first region is disposed in a region of a distance of not more than 100 nm from an end portion of said carbon film facing said first gap toward a direction of said electrodes.

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~~6.~~ (Previously Presented) The electron-emitting device according to claim ⁶~~2~~, wherein said carbon film further has a second region orientated in a direction approximately normal to the surface of said substrate.

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~~7.~~ (Currently Amended) The electron-emitting device according to claim ~~6~~, wherein the direction approximately normal direction to the surface of said substrate is not less than -30 degrees and not more than +30 degrees from a normal direction against the surface of said substrate.

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~~8.~~ (Previously Presented) The electron-emitting device according to claim ~~6~~, wherein the second region is disposed between the first region and said electrodes.

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~~9.~~ (Previously Presented) The electron-emitting device according to claim ⁹~~6~~, wherein said carbon film has a third region without any particular orientation, and said third region is disposed between the first region and the second region.

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~~10.~~ (Previously Presented) The electron-emitting device according to

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claim², wherein said carbon film and the first and the second electrodes are connected via an electroconductive film.

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~~11.~~ (Previously Presented) An electron source comprising a plurality of electron-emitting devices which have been arranged and formed on a substrate, wherein each electron-emitting device is the electron-emitting device according to claim 1 or⁶ ~~2.~~

¹⁵
~~12.~~ (Original) An image forming apparatus comprising an electron source and an image forming member forming images with electrons to be emitted from the electron source being radiated, wherein the electron source is an electron source¹⁴ according to claim ~~11.~~

¹⁶
~~13.~~ (Previously Presented) An electron-emitting device comprising:

- (a) first and second electroconductive films electrically connected to first and second electrodes, respectively, on a substrate surface, and disposed between the first and second electrodes;
- (b) a first carbon film, part of the first carbon film being disposed on the first electroconductive film and another part of the first carbon film being disposed between the first and second electroconductive films;
- (c) a second carbon film, part of the second carbon film being disposed on the second electroconductive film and another part of the second carbon film being disposed between the first and second electroconductive films;

wherein said first and second carbon films have a region showing orientation, on the first and second electroconductive films, and

wherein a direction of the orientation is an approximately normal direction relative to the substrate surface.

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14.

(Previously Presented) An electron-emitting device comprising:
first and second electrodes disposed on a surface of a substrate;
an electroconductive film connecting said first and second electrodes and including a second gap;
a carbon film connected to said electroconductive film and including a first gap;

wherein said first gap is disposed inside said second gap, and said carbon film has, on said electroconductive film, a first region showing orientation, and a direction of the orientation is approximately normal to the surface of said substrate.

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claim 13 or 14, wherein the direction is not less than -30 degrees and not more than +30 degrees relative to the surface of the substrate.

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claim 14, wherein said carbon film further has a second region orientated in an approximately parallel direction to the surface of said substrate.

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~~17.~~ (Previously Presented) The electron-emitting device according to claim ¹⁹~~16~~, wherein said approximately parallel direction is not less than -45 degrees and not more than +45 degrees along the surface of said substrate.

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¹⁹~~18.~~ (Previously Presented) The electron-emitting device according to claim ~~16~~, wherein the second region faces said first gap.

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¹⁹~~19.~~ (Previously Presented) The electron-emitting device according to claim ~~16~~, wherein said second region is disposed in a region of a distance of not more than 100 nm from an end portion of said carbon film facing said first gap toward a direction of said electrodes.

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¹⁹~~20.~~ (Previously Presented) The electron-emitting device according to claim ~~16~~, wherein the first region is disposed between the second region and said electrodes.

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¹⁹~~21.~~ (Previously Presented) The electron-emitting device according to claim ~~16~~, wherein said carbon film has a third region without any particular orientation, and said third region is disposed between the first region and the second region.

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~~22.~~ (Previously Presented) An electron source comprising a plurality of electron-emitting devices which have been arranged and formed on a substrate, wherein the

electron-emitting device is the electron-emitting device according to claim ^{16 17}~~13~~ or ~~14~~.

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~~23.~~ (Original) An image forming apparatus comprising an electron source and an image forming member forming images with electrons to be emitted from the electron source being radiated, wherein the electron source is an electron source ²⁵ according to claim ~~22~~.

²⁷
~~24.~~ (New) An electron-emitting device comprising first and second carbon films which are disposed on a surface of a substrate with a first gap therebetween, and first and second electrodes having an electrical connection to the first and second carbon films, respectively, wherein each of the first and second carbon films has a first region including graphite (002) planes stacked in a direction approximately parallel to the surface of the substrate.

²⁸
~~25.~~ (New) The electron-emitting device according to claim ²⁷~~24~~, wherein said first and second carbon films are connected to part of the first and second electrodes, respectively.

²⁹
~~26.~~ (New) The electron-emitting device according to claim ²⁷~~24~~, wherein the graphite (002) planes are stacked in a direction not less than -45 degrees and not more than +45 degrees against the surface of the substrate.

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~~27~~. (New) The electron-emitting device according to claim ²⁷~~24~~, wherein the first region faces the first gap.

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~~28~~. (New) The electron-emitting device according to claim ²⁷~~24~~, wherein the first region is disposed in a region located at a distance of not more than 100 nm from an end portion of at least one of the carbon films facing the first gap toward a direction of the electrodes.

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~~29~~. (New) The electron-emitting device according claim ²⁷~~24~~, wherein each of the first and second carbon films has a second region including graphite (002) planes stacked in a direction approximately normal to the surface of the substrate.

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~~30~~. (New) The electron-emitting device according to claim ³²~~29~~, wherein the first region in each of the first and second carbon films is disposed between the first gap and the second region in each of the first and second carbon films.

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~~31~~. (New) The electron-emitting device according to claim ³²~~29~~, wherein the second region is disposed between the first region and the electrodes.

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~~32~~. (New) The electron-emitting device according to claim ³²~~29~~, wherein each of the carbon films has a third region between the first region and the second region thereof, and in the third region directions in which graphite (002) planes are stacked and

are random.

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~~33~~. (New) The electron-emitting device according to claim ²⁷~~24~~, wherein the first carbon film and the first electrode are connected via a first electroconductive film, and the second carbon film and the second electrode are connected via a second electroconductive film.

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~~34~~. (New) The electron-emitting device according to claim ³⁶~~33~~, wherein a part of the first carbon film is disposed on the first electroconductive film and another part of the first carbon film is disposed between the first and second electroconductive films, and a part of the second carbon film is disposed on the second electroconductive film and another part of the second carbon film is disposed between the first and second electroconductive films.

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~~35~~. (New) An electron source comprising a plurality of electron-emitting devices which have been arranged and formed on a substrate, wherein each electron-emitting device is an electron-emitting device according to any one of claims ²⁷~~24~~ through ³⁶~~33~~.

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~~36~~. (New) An image forming apparatus comprising an electron source and an image forming member which forms images in response to being irradiated with electrons emitted from the electron source, wherein the electron source is an electron

source according to claim ³⁸~~35~~.

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~~37~~. (New) The electron-emitting device according to claim 1, wherein at least one of said carbon films further has a second region orientated in a direction approximately normal to the surface of said substrate.

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~~38~~. (New) The electron-emitting device according to claim ²~~37~~, wherein the direction approximately normal to the surface of said substrate is not less than -30 degrees and not more than +30 degrees from a normal direction against the surface of said substrate.

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~~39~~. (New) The electron-emitting device according to claim ²~~37~~, wherein the second region is disposed between the first region and said electrodes.

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~~40~~. (New) The electron-emitting device according to claim ²~~37~~, wherein the at least one of said carbon films has a third region without any particular orientation, and said third region is disposed between the first region and the second region.